

We Claim:

1. A multi-function hub for use in an assist system, comprising:
a physical interface for providing mechanical support within an assist system;
programmable logic for implementing program controlled functions; and
5 an input/output ("I/O") interface for communication to a plurality of
computational nodes.

2. The hub of claim 1 wherein the programmable logic implements input/output
communication functions.

3. The hub of claim 1 wherein the programmable logic implements motion control
algorithms.

4. The hub of claim 1 wherein the I/O interface provides communication to a
15 plurality of sensors.

5. The hub of claim 1 wherein the I/O interface provides input from an intent
sensor.

6. The hub of claim 1 wherein the I/O interface provides control outputs to
20 actuators.

7. The hub of claim 1 further comprising an electrical interface to provide
electrical power to a tooling.

8. The hub of claim 1 further comprising an pneumatic interface to provide
25 pneumatic power to a tooling.

9. The hub of claim 1 further comprising:

user operable controls accessible from the outside of the hub.

10. The hub of claim 1 further comprising:

an user interface connectable to a an external computer. or PDA

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11. The hub of claim 1 further comprising:

a network interface in communication with a local area network.

12. The hub of claim 1 further comprising:

10 a network interface in communication with an information network.

13. The hub of claim 1 further comprising:

a network interface in communication with an Internet.

15 14. The hub of claim 1 further comprising:

a load cell for determining the weight of a payload suspended from the multi-function hub.

15. The hub of claim 1 further comprising:

20 a strain gauge for determining the weight of a payload suspended from the multi-function hub.

16. The hub of claim 1 further comprising:

25 a flexure for determining the weight of a payload suspended from the multi-function hub.

17. The hub of claim 1 further comprising:

user programmable switches on the outside of the hub.

18. The hub of claim 1 further comprising:
a user display.

5 19. The hub of claim 1 further comprising:
a personal digital assistant.

20. The hub of claim 1 wherein the physical interface comprises a swivel.

10 21. The hub of claim 1 further comprising an intent sensor in communication with
the hub to indicate a user's intent to move the payload.

22. The hub of claim 21 wherein the intent sensor is mechanically fastened to the
hub.

15 23. The hub of claim 21 wherein the intent sensor comprises an inline handle.

24. The hub of claim 23 wherein the inline handle comprises a grip.

20 25. The hub of claim 23 wherein the inline sensor descends from the hub.

26. The hub of claim 21 wherein the intent sensor comprises a slidable collar.

27. The hub of claim 21 wherein the intent sensor comprises a spring return.

25 28. The hub of claim 21 wherein the intent sensor comprises a hall-effect
proportional control.

29. The hub of claim 21 wherein the intent sensor comprises user operable
controls.

30. The hub of claim 21 wherein the user operable controls are programmable.

31. The hub of claim 21 wherein the intent sensor comprises a threaded
5 mechanical connection.